

## REMARKS

To simplify prosecution, claims 2, 3, 5, 6, 7, 8, 9, 10 11, 12, 13, 17, 18, and 21 have been canceled. Independent claims 1 and 19 have been amended to include the substance of now canceled dependent claims 6 and 21. The application now includes claims 1, 4, 14, 15, 16, 19 and 20.

Independent claims 1 and 19 now require that the hotmelt adhesive be applied as a dispersion (see canceled claim 21, and paragraph [0052] of the printed application) through a contoured screen (see Figure 8 of the application).

On page 7 of the office action, claims 6 and 21 were rejected as being obvious over U.S. Patent 5,356,751 to Cairncross or U.S. Patent Publication 2004/0265504 to Magnin in view of U.S. Patent 3,922,418 to Lauchenauer. Also, on page 16 of the office action, claims 6 and 21 were rejected as being obvious over the admitted prior art ("APA" defined as "microcomponents are conventionally glued using viscous adhesives" (see page 11 of office action)), U.S. Patent Publication 2003/0029742 to Derand, or U.S. Patent 6,126,765 to Ohman in view of either Cairncross or Magnin, and further in view of Lauchenauer. Both of these rejections, as they may be applied to amended claims 1 and 19 and their dependent claims, are traversed for the reasons discussed in detail below.

The rejections or objections of claims which have been canceled are now moot. In addition, the rejections of claims which do not address the substantive limitations of claims 1 and 19 as now amended, are moot as not being applicable to the substance of claims 1 and 19.

Cairncross discloses a process for mounting of free flowing particles on a support surface having an array of tacky areas (see Abstract). Examples of such free flowing particles includes certain mineral grains, crystalline chemical products, salt and sugar granules, etc. (column 1, line 66 to column 2, line 2). These particles are mounted to microscope slides for using in analysis by microscopy (see column 2, lines 17-21). Because the particles are glued to the support surface in the free flowing manner, the process is a random process which does not provide predefined exact results.

In the advisory action mailed April 28, 2009, the Examiner suggested that the micro particles of Cairncross can be deemed to be “microcomponents” as specified in the claims. This is clearly in error. Attached to this response is a dictionary definition obtained from Websters English language dictionary which indicates that a microcomponent is a hi-fi component—it is not a particle as shown in Cairncross. Thus, Cairncross does not show adherence of a microcomponent to an adhesive. In the advisory action, the Examiner also suggests Cairncross also shows the use of a contoured screen to place hot melt adhesive at precise locations. This is also clearly in error. As noted in the Abstract of Cairncross, the particles are flowed across a support surface to contact a tacky area. Figure 2 shows the adhesive 15 as a “layer”. Thus, it is clear that Cairncross does not show applying hot melt adhesive through a screen.

In contrast, claims 1 and 19 of the present application both specify that the hot melt adhesive is applied as a dispersion through a contoured screen. Figure 8 of the application shows this methodology places the adhesive at specific areas 7 on the surface of the substrate. Furthermore, claim 1 specifies “a result that said hotmelt adhesive is present only selected contact areas on a surface of at least one of a substrate and at least one microcomponent, said hotmelt adhesive not being present on other areas on said surface of said at least one of a substrate and at least one microcomponent”.

Thus, Cairncross does not disclose or suggest gluing microcomponents to a substrate in the production of a microsystem components. Instead, it is a method for preparing a microscope slide with particles to be analyzed.

In addition, the random process of Cairncross requires that the substrate provides tacky areas. This requires a permanent tackiness during the flowing process of the particles. The present invention defines a different process, namely by melting the hotmelt adhesive and bonding the microcomponent to the substrate during cooling of the hotmelt adhesive below its melting point. Both claims 1 and 19 of the application require bonding or adhering during cooling, and this is not disclosed in Cairncross. Even though in the Cairncross document a heatable powder adhesive is mentioned, there is no disclosure or suggestion of bonding a

component during cooling of the hotmelt adhesive. This is not a matter of course, since there are heatable adhesives which stay tacky even after removal of the heat source, and the requirement for permanent tacky areas in Cairncross suggests that this type of adhesive is being used (see column 4, lines 60-64 of Cairncross).

Lachenauer discloses a heat sealable textile sheet material suitable for use as an interlining for garments. A coating of thermoplastic resin particles is applied to the textile sheet material (see Abstract). Lachenauer explains that through the application of heat and an applied crosslinking agent, a portion of the applied resin particles are crosslinked to produce a textile laminate which can withstand repeated laundering. Note particularly that the resin particles are not being used to secure something else to the textile laminate. That is, Lachenauer is applying a non-adhesive coating

The advisory action mailed April 28, 2009 erroneously concludes that the adhesive in Lachenauer is a “dispersion” because it is spread selectively across the surface of a substrate. This statement is not understood. Attached is a dictionary definition of “dispersion” which indicates that it constitutes a system of dispersed particles “suspended in” a solid, liquid or gas. Column 6, lines 34-46 clearly describes the Lachenauer coating to be applied to the textile sheet material as composition as a powder or paste. It is also noted that the powder or paste of Lachenauer is not applied to specific locations on the textile; rather it is applied to the surface of the textile material. Thus, it is incorrect to suggest that Lachenauer shows anything similar to a “contoured screen” where the adhesive is “not present” on certain surfaces of the substrate as required in the claims.

#### Cairncross and Lachenauer

No combination of Cairncross and Lachenauer would make the claimed invention of claims 1 and 19, and their dependent claims, obvious to one of ordinary skill in the art for at least the following reasons.

A) Neither reference shows the use of a hotmelt adhesive in the form of a dispersion (as required in the claims)

- B) Neither reference shows the use of a contoured screen to place hot melt adhesive at precise locations. Instead, Cairncross describes randomized position of particles in the preparation of microscopes slides and Lauchenauer describes making a coating of particles.
- C) Neither reference shows the adherence of a microcomponent to a substrate.
- D) Neither reference shows attaching a device during cooling of a hot melt adhesive.

While not applied in this combination, U.S. Patent 5,422,146 to Adams does not make up for the deficiencies of the Cairncross/Lauchenauer combination since Adams discloses a process of powder coating workpieces, and does not show gluing of microcomponents to a substrate.

Magnin describes electrostatically applying a powder adhesive to a non metallic substrate such as paper or plastic (see Abstract). The applied powder adhesive can be activated by a number mechanism including heat or radiation, so that the substrate can stick something else or to itself.

Magnin is not directed to gluing microcomponents to a substrate. Rather, it is directed to gluing paper or plastic to something else. With reference to paragraph [0041] of Magnin, it can be seen that Magnin does not contemplate any application remotely similar to gluing microcomponents. Magnin does not show or suggest the use of a dispersion; rather, Magnin shows the use of a powder. Magnin does not show passing a dispersion through a contoured sheet. Rather, Magnin relies on electrostatic application of particles to the paper or plastic.

#### Magnin and Lauchenauer

No combination of Magnin and Lauchenauer would make the claimed invention of claims 1 and 19, and their dependent claims, obvious to one of ordinary skill in the art for at least the following reasons.

- A) Neither reference shows the use of a hotmelt adhesive in the form of a dispersion (as required in the claims)
- B) Neither reference shows the use of a contoured screen to place hot melt adhesive at precise

locations. Instead, Magnin describes the application of powder to paper or plastic using electrostatic means and Lauchenauer describes making a coating of particles.

C) Neither reference shows the adherence of a microcomponent to a substrate.

D) Neither reference shows attaching a device during cooling of a hot melt adhesive.

APA, Derand, or Ohman in combination with Cairncross or Magnin and Lachenauer

As described in detail above, the combinations of Cairncross and Lachenauer and Magnin and Lachenauer does not make the claimed invention obvious. None of APA, Derand, or Ohman make up for the deficiencies of these combinations.

APA is referenced merely as showing the use of a viscous glue for glueing microcomponents. APA, like Cairncross, Magnin and Lachenauer, does not show the use of a dispersion. APA, like Cairncross, Magnin and Lachenauer, does not show the use of a contoured screen. As a result no combination of APA with Cairncross or Magnin and Lachenauer would make the claimed invention obvious.

As noted on page 11 of the office action, Derand and Ohman have been relied upon for the same reasons as APA—the showing of adhesives being used to bond microcomponents to substrates. Derand and Ohman are deficient for the same reasons APA is deficient.

In view of the amendments above, claims 1, 4, 14, 15, 16, 19 and 20 should now be in condition for allowance, and reconsideration and allowance of the claims at an early date is requested.

Serial No.: 10/568,755

S. Boehm et al.

Page 9

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041 (Whitham, Curtis, Christofferson & Cook).

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Michael E. Whitham', is written over the typed name.

Michael E. Whitham

Reg. No. 32,635

Whitham, Curtis, Christofferson & Cook, P. C.



11491 Sunset Hills Road, Suite 340

Reston, Virginia 20190

(703) 787-9400

Customer Number: **30743**

---

**mi-cro-com-po-nent**  [mahy-kroh-kuh m-**poh**-nuh nt] 

[Show IPA](#)

**-noun**

a hi-fi component considerably smaller than a minicomponent and much smaller than a standard-size component.

**Origin:**

MICRO- + COMPONENT

**dis-per-sion**  [di-**spur**-zhuh n, -shuh n]  [Show IPA](#)

**–noun**

1. Also, **dispersal**. an act, state, or instance of dispersing or of being dispersed.
2. *Optics*.
  - a. the variation of the index of refraction of a transparent substance, as glass, with the wavelength of light, with the index of refraction increasing as the wavelength decreases.
  - b. the separation of white or compound light into its respective colors, as in the formation of a spectrum by a prism.
3. *Statistics*. the scattering of values of a variable around the mean or median of a distribution.
4. *Military*. a scattered pattern of hits of bombs dropped under identical conditions or of shots fired from the same gun with the same firing data.
5. Also called **disperse system**. *Physical Chemistry*. a system of dispersed particles suspended in a solid, liquid, or gas.
6. (*initial capital letter*) DIASPORA (def. 1).

**Origin:**

1350–1400; ME *dispersio(u)n* (< AF) < L *dispersiōn-* (s. of *dispersiō*), equiv. to *dispers(us)* (see DISPERSE) + *-iōn-* -ION